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ABSTRACT

The "Pratiques exemplaires en technologies de l'information et de la communication" series for francophone and immersion schools is an initiative of French Language Services Branch, in cooperation with the Stakeholder Technology Task Group of Alberta Learning. The series has a dual purpose: to provide information on aspects of implementing the information and communication technology (ICT) program of studies, aspects that are unique to the French First Language and the French Immersion programs; and to offer examples of best practices to support the effective implementation of these programs. This document deals with orientations that are unique to French immersion (K-12) schools, and is designed to: remind readers of the context and foundations of the French immersion program; discuss the issues regarding the implementation of ICT in immersion schools; provide the technological information necessary for implementing ICT in immersion schools; propose solutions and make recommendations; guide technology planning and decision making in immersion schools. The document is organized into four sections. "Why ICT in French?" reviews the foundations of the French immersion program, which should guide decisions about implementing the ICT program. Topics covered include definition, program, basic principles, objectives, conditions required for success, language acquisition and ICT support. "Creating Bilingual Computer Systems" provides planning and technical information to help schools establish bilingual computer systems. "Teachers' Expertise" suggests ways to help immersion schools plan for the improvement of teachers' competencies in technology. "Practical Considerations for the Immersion Classroom" deals with items specific to immersion programs: the French ICT program of studies, beginning implementation and collaborative planning, home computer, software selection and the quality of language. Appendixes include: information about French Language software and operating systems; example of a French keyboard; useful links for implementing the ICT program; recommended software for French Language Arts; key considerations in selecting software or online reference

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products; information for parents on learning technology in Alberta schools; and adding French keyboard layout-Windows and Mac OS. (AEF)

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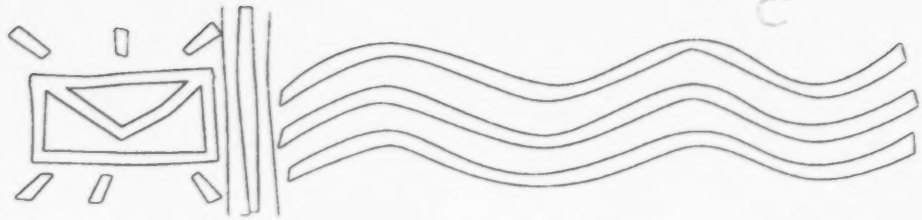

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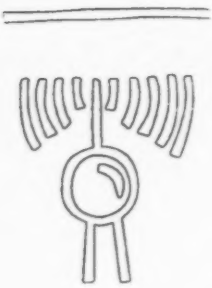

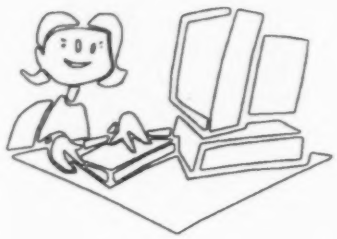

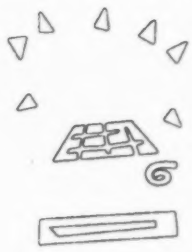

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Alberta
LEARNING
Direction de l'éducation française

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de l'information et de la communication

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The primary intended audience for this document is:

Administrators/School Principals	✓
Jurisdictional Technology Coordinators	✓
Teachers	✓
Parents	
Students	

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Introduction

The *Pratiques exemplaires en technologies de l'information et de la communication* series for francophone and immersion schools is an initiative of the French Language Services Branch, in cooperation with the Stakeholder Technology Task Group of Alberta Learning. The series has a dual purpose:

1. To provide information on aspects of implementing the information and communication technology (ICT) program of studies, aspects that are unique to the French First Language and the French Immersion programs, and

2. To offer examples of best practices to support the effective implementation of these programs.

This document deals with orientations that are unique to French Immersion (K-12), and is designed to:

- remind readers of the context and foundations of the French immersion program
- discuss the issues regarding the implementation of ICT in immersion schools
- provide the technological information necessary for implementing ICT in immersion schools
- propose solutions and make recommendations
- guide technology planning and decision making in immersion schools

This document is intended for the following stakeholders:

- administrators (superintendents, consultants, other central office personnel)
- ICT systems administrators and computer technicians
- immersion teachers
- immersion school principals
- educational consultants

This document is also available in French: *Orientations en TIC pour l'immersion française*. A print version may be purchased from the Learning Resources Centre, and it is available electronically at the Alberta Learning Web site.

This document is organized into four sections:

1. *Why ICT in French?* reviews the foundations of the French immersion program, which should guide decisions about implementing the ICT program. Topics covered include definition, program, basic principles, objectives, conditions required for success, language acquisition and ICT support.

2. *Creating Bilingual Computer Systems* provides planning and technical information to help schools establish bilingual computer systems.

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3. *Teachers' Expertise* suggests ways to help immersion schools plan for the improvement of teachers' competencies in technology.

4. *Practical Considerations for the Immersion Classroom* deals with items specific to immersion programs: the French ICT program of studies, beginning implementation and collaborative planning, home computer, software selection and the quality of language.

Other documents in the *Pratiques exemplaires* series are currently being prepared in French. Their proposed titles are:

- *Programme et pédagogie*
- *Les TIC à l'appui de l'éducation francophone*
- *La télé-collaboration au service de l'éducation en français*
- *J'ai des questions sur...*

These documents will be published in both print and electronic formats. As they become available, they can be downloaded from the following French Language Services Branch site: www.learning.gov.ab.ca/french/Tech_infor_comm/default.asp or ordered from the Learning Resources Centre.

Some aspects of the integration of ICT in schools are common to all programs. In addition to the *Pratiques exemplaires* series, Alberta Learning has published a series entitled *Technology Implementation Studies: Best Practices for Alberta School Jurisdictions* in English. This series examines the following topics:

- technology skills of present and future teachers
- integration of ICT learning and evaluation outcomes
- implementation of ICT
- professional development resources for teachers
- total cost of ownership for technology
- connectivity and flow rates of network connections
- cost-effectiveness of ICT investments

Publications from this series are available on Alberta Learning's Web site at www.learning.gov.ab.ca/technology/bestpractices/, or in print format at the Learning Resources Centre.

Alberta Learning wishes to acknowledge the contributions of the following Alberta Learning Branches and Committee members who provided input and feedback during the development of this document:

Direction de l'éducation française
French Immersion ICT Advisory Committee (FIICTAC)
Jurisdiction Technology Contacts (JTCs)
K-12 Technology Advisory Group (TAG)
School Technology Advisory Committee (STAC)
Stakeholder Technology Task Group

I. WHY ICT IN FRENCH?

This section, which describes the fundamental nature of immersion programs, is intended for readers who may not be familiar with the details or the processes underlying French immersion (e.g., central office administrators, ICT managers, technicians, etc.). However, it may also serve as a useful review for immersion teachers and principals.

The following three closely related factors guide all educational decisions about delivering immersion programs:

- the definition, context and goals of immersion programs
- the conditions for success (i.e. the characteristics of a good immersion program)
- the principles underlying the process by which students acquire a second language

Alberta Learning has adopted the principle of integrating the ICT program into the core subjects. In other words, ICT must be dovetailed with the goals and pedagogy of French immersion: the integration process should support the goals of the French immersion program and help students master the French language. Therefore, it is very important to give immersion students the opportunity to use technology in French.

➢ The Immersion Program

Immersion programs have been very successful in Alberta since the 1970s. In the French immersion classroom, a French-language motivating environment is created, and students are immersed in it. Learning is based on rich, complex, real-life situations that lead students to communicate and learn in the second language.

The immersion concept has been described as follows:

> **Immersion** : "A program in which French is the language of instruction for a significant part of the school day; that is, several or all subjects are taught in French. Immersion is designed for students whose first language is not French. The objective is full mastery of the English language, functional fluency in French, as well as an understanding and appreciation of the French culture."
> *Yes, You Can Help! – A Guide for French Immersion Parents*, Alberta Education, 1996, p. 5.

Generally, the mother tongue of immersion students is a language other than French. They follow the same programs of study as students in unilingual programs, but do so in French for most elementary courses and several secondary courses.

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Alberta Learning supports the French immersion program and its rationale, and encourages all students to learn French in order to develop their communication skills and their understanding of francophone culture:

> "Alberta Education encourages opportunities for all Alberta students to learn French by making available French immersion programs, French second language courses and related services."
> *Policy, Regulations and Forms Manual,* Alberta Learning, May 5, 1998.

Parents who choose French immersion for their children are entitled to expect that the school jurisdiction offering such a program will establish the best possible conditions to ensure the program's success. Varying local demographic and economic circumstances may affect school authorities ability to offer the ideal scenario such as teaching all core subjects in French except English language arts. However, they are responsible for clearly informing their clientele about the program they can offer and accountable for the students' success in learning French.

The development of French language skills and the integration of these skills into all subjects taught in French is a fundamental principle of an immersion program. The French language arts program has primary responsibility for the development of language skills, but those who teach other subjects in French such as science, math and social studies share this responsibility, as all of these programs include a communication component. Immersion teachers therefore have a double responsibility, first vis-à-vis the subject they teach, and second vis-à-vis the development of French language skills. The importance of this principle of integration has to be stressed, because, unlike students who take their courses in English, immersion students can count on only the school and classroom, not the outside environment, to reinforce French language acquisition.

The number of hours of instruction is an important consideration when offering immersion programs.

> "Research and experience have demonstrated clearly that student proficiency in the French language is strongly correlated to the amount of time during which French is used as a language of instruction."
> *Guide to Education – ECS to Grade 12,* Alberta Learning, September 2001.

In practice, because of varying educational factors across the province, more time is allotted to French language acquisition at the elementary level than at the secondary level. However, to retain what they have learned and to make progress in the second language, students should continue to use French regularly throughout their immersion program. Alberta Learning recommends the following percentages of time to instruction in French in the immersion program:

- Kindergarten 100%
- Grades 1-2 90% to 100%
- Grades 3-6 70% to 80%
- Grades 7-9 50% to 80%
- Grades 10-12 40% to 80%

➢ The ICT Program in Support of Immersion Programs

Since the ICT program of studies was designed to be integrated across program areas, its implementation in French immersion schools must take place **in the language of instruction.**

> "Schools offering Francophone and French immersion programs must take into account that ICT outcomes are to be achieved in the French language."
> *Information and Communication Technology - Program of Studies (K-12),*
> Alberta Learning, 2000.

Thus, ICT should be taught in French in subjects that are taught in French, and in English in subjects that are taught in English.

Alberta Learning's recommendations regarding the maximum percentage of instructional time allotted to French represent an ideal scenario for obtaining the best possible results in terms of the students' language development. At the elementary level, where most core subjects are taught in French, it would seem logical to have the proportion of ICT specific learning outcomes (SLOs) achieved by students in French reflect the time spent in learning in French during the week. As students advance, instruction in French may take a smaller portion of the day, however the proportion for ICT integration should be respected.

The ICT Program of Studies also states that

> "... the acquisition of software and operating systems should be consistent with the language of learning. In the case of dual-track schools, decisions regarding software and operating systems should be made on the basis of the needs of both student clienteles."

Students should also have the tools they need to use computers in French.

Language is inherent to most of the ICT learning outcomes. Therefore in courses taught in French where ICT integration is taking place, immersion students need to be able to work on French language computers. Otherwise they will not be able to achieve most ICT outcomes.

➢ Conditions for the Success of an Immersion Program

A rich and varied immersion school culture that promotes factors conducive to the learning of French contributes significantly to the program's success. For the past 30 years, French immersion has been one of the most studied fields in education, and there seems to be a consensus with respect to several quality indicators of a good immersion program. ICT has a role to play in the learning process and in regard to these factors that contribute to the school's culture and the program's success. The following chart lists these indicators and connects them to the ICT program in an immersion school.

Factors in the Success of an Immersion Program	Connection with ICT
The school's commitment to the program is evident in its mission, policies and practices.	The school's mission, policies and practices take into account the French ICT dimension: planning, professional development, use of computers. The same effort is made to provide French-language technology tools as is made in other aspects of the program (textbooks, posters in the classrooms, etc.).
French is promoted in the school and in the classroom. The visibility of the language helps to promote the program.	The expectations regarding the use of French in ICT and in the classroom are clearly identified and maintained. Students, parents and visitors see that French is present everywhere in the school, including its computers. The school's Web site reflects the fact that French is used in the school.
The French language is valued in all subjects taught in French.	ICT is integrated into French classes and core subjects taught in French: social studies, math and science. This is the rule, not the exception.
Learning activities are meaningful and designed to encourage communication and participation.	A project approach is favoured for ICT integration; students' input and involvement are built into all phases: pre-project/project/post-project. Learning activities are planned to take advantage of the assets offered by software productivity and communication tools (greater flexibility, choice, increased student motivation as suggested by research findings).
The program is enriched by actual experiences and cultural activities in French.	ICT learning outcomes can be achieved in authentic activities and virtual environments in French by making use of tools such as the Internet, Web site development, e-mail exchanges with young people from francophone or francophile communities, or collaborative school-to-school student projects.
Teachers are language models for the students.	Teachers are strongly encouraged to work with technology in French. They have the necessary tools (terminology references, software) and have access to training in French.
Appropriate and sufficient resources are available.	Students have access to technology in French. Just like the resources provided in the library, the tools and the different computer programs available to students reflect the importance French has in the school.

ICT outcomes should be taken into account in all planning and learning processes of the immersion program. The responsibility for integrating ICT into the school's immersion culture falls to all stakeholders: school district administrators, school principals, teachers, educational consultants and ICT managers. Integrating ICT within the overall French programming is an important step for school districts who have made the decision to offer an immersion program.

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➢ Language Acquisition

Decisions about integrating ICT into French immersion programming should also respect the second language acquisition process. The following quotes highlight several of the conditions that have a positive effect on the language acquisition process from kindergarten to graduation:

> "... It is because language is operating as a real means of communication, a vehicle by which a child participates in a real event, communicating with and for a real audience that French... is mastered by the child with amazing rapidity."
> *Yes, You Can Help! – A Guide for French Immersion Parents*, Alberta Education, 1996, p. 24.

> "Second language acquisition is affected by: relevance, meaningful communication, interest, security, confidence, interaction, models."
> *French Immersion in Alberta – Building the Future – A Working Conference for Education Leaders*, November 1998, Edmonton.

Language acquisition requires real and meaningful learning experiences that enable students to make progress in French, and to construct their knowledge and develop their cognitive skills in the second language. French language acquisition therefore extends far beyond the limits of French language arts courses. Students learn French by also taking courses in science, social studies, math or CTS. These subjects perform an essential function by allowing the immersion of students in scenarios that encourage listening and speaking in French, and by providing them with an environment that is rich in real-life, complex situations, where they use the language to communicate, learn and solve problems. Thus, all courses offered in French should provide students with the opportunity to validate their accomplishments in language learning and give them meaning.

As with other subjects, the program of studies for ICT plays a role in the acquisition of language and its integration into the learning process. The French version of the *ICT Program of Studies* states: [translation]

> "As is the case for any subject offered as part of a French program, be it in a French first language or an immersion class, information and communication technologies contribute to the student's language development."
> *Programme d'études des TIC*, Alberta Learning, 2000, p. 3.

Students develop their ICT skills by taking courses in social studies or science while at the same time communicating in the language of instruction.

The learning principles underlying the French language arts (FLA) program and the ICT program are based on a common perception of learners as active, accountable and motivated individuals who are constructing their knowledge.

FLA Program Learning Principles	Contribution of ICT
Learning is an active, constructive process.	Students use the new ways that ICT offers to communicate, inquire, solve problems or make decisions. In real-life situations, students choose and use tools, processes and techniques according to the situation. ICT reinforces the students' role as principal architects of their learning by offering them more freedom, flexibility and choice.
Learning requires constant organization of knowledge.	ICT competencies are about thinking and communicating: locating, gathering, classifying, summarizing, synthesizing, analyzing and evaluating information, presenting, hypothesizing, predicting, reflecting on the process. The use of computerized tools such as draw/graphics applications, databases, simulations and multimedia presentations enables learners to take their learning and thinking processes a step further.
School motivation determines the degree to which students are committed to, and participate and persevere in their learning process.	Several studies have already shown that by facilitating tasks and offering more choice and more control over learning, the use of technology significantly encourages student motivation, commitment, participation and perseverance.

ICT in Support of Language Learning

The challenges immersion teachers face include:

- creating and maintaining a French language environment in the classroom
- organizing, motivating and stimulating activities that encourage students to express themselves in different ways and in a variety of situations
- minimizing the use of English in courses taught in French; and
- accessing French resources that support teaching and learning

Therefore, it is important to ensure that ICT supports and enhances second-language learning experiences.

Having students work on computers in French sends them a powerful message. For example, they understand that their immersion program is valued, that the language they are learning is important and that it is not unusual to work on computers in French. Giving students the opportunity to use computers in French also exposes them to another rich and stimulating cultural universe, with its own terminology and its infinite possibilities. In addition, the role of technology in the workplace continues to expand, and people around the world are connecting and interacting in increasing numbers.

The amount of time students spend on the computer is an operative factor in language acquisition. Each course taught in French is assigned a certain number of minutes per week, and some of this time is dedicated to learning activities using the computer. If the computer programs and operating systems are not available in French, the students will spend part of their course thinking and working in English, as they learn how to operate the equipment and productivity software. Consequently, the time allocations recommended by Alberta Learning will be affected and the extent of the exposure to the French language substantially reduced,

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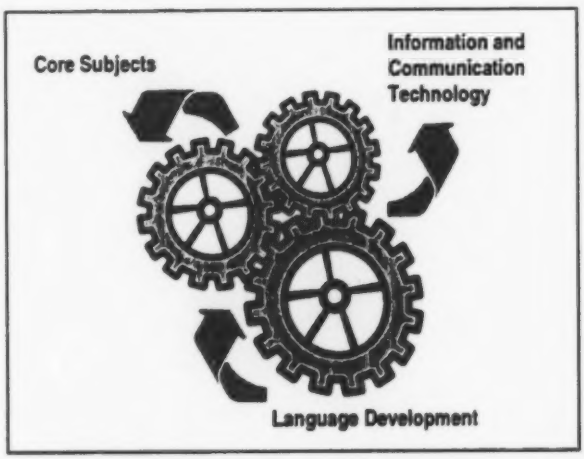
especially if this practice carries over to other subjects taught in French. Not being able to work on the computer in French deprives students of an enriching learning experience; it also compromises the authenticity of the immersion experience and lowers the status of French in the students' minds.

The analogy of a gear assembly is useful in illustrating the interconnection of language, ICT and core subjects.



Analogy of a gear assembly – ICT contributes to language development and to learning achievements in the core subjects. In immersion programs, this is true provided that the tools, techniques and processes are in French.

In conclusion, the *Information and Communication Technology Program of Studies* is based on the same philosophy of subject integration that has always been essential in French immersion. In this program, integration, language development and knowledge-building have all become essential factors for students in achieving functional bilingualism. Implementing the ICT program in immersion programs must be in line with this philosophy to ensure that immersion students achieve those same results obtained after 30 years of development and success in immersion pedagogy.

II. CREATING BILINGUAL COMPUTER SYSTEMS

This section provides technical information that ICT managers and technicians need to set up computers that operate in both English and French. Teachers, school principals and educational consultants will find the information provided in this section useful when they have to discuss more technical aspects with the school or jurisdiction technicians.

➢ Planning for "Bilingualization"

Ideally, immersion students will have access to a computer environment in which everything from the operating system to applications, including spelling and grammar checks, is in French. Providing such an optimal learning environment will require that schools plan for the "bilingualization" of their computer systems and incorporate it into their school's or jurisdiction's overall technology plans. Key decisions will be made taking into account factors such as:

- costs of "bilingualization"
- justifying the expense in relation to the number of immersion students, etc.
- location of bilingual computer systems (in labs, classrooms)
- computers dedicated to each language or computers shared by English and French language students
- bilingual computers on or off the network
- technical limitations or constraints (e.g. hard disk space, incompatibilities, etc.)
- availability of specific software tools

Specific steps designed to better respond to the needs of immersion students and teachers could include:

- Requesting bilingual keyboards at the time of purchase (tendering process)
- Ordering the right versions of operating systems or software by requesting multilingual resources
- Avoiding multiple installations and reconfiguring, thus saving valuable time and money

Most of the types of hardware and software that currently exist in Alberta schools can be adapted to offer the end user a French user interface and French software, although in some cases the process may be time-consuming and/or expensive. While considering steps to take and making decisions in this regard, schools have to assess where they are in the "bilingualization" process and then choose the option that best suits them.

➢ Option 1. Using Newer Operating Systems/Software

Recent offerings from software vendors have made it much easier and less costly to install multilingual operating systems and productivity software. Web browsers can also be downloaded and installed in French. On the hardware side, bilingual keyboards are widely available. Schools can consider this as their best option if their school's or jurisdiction's technology plan includes an

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overall upgrade to newer versions within a short time, or if they have not yet started the "bilingualizing" process or are just starting it.

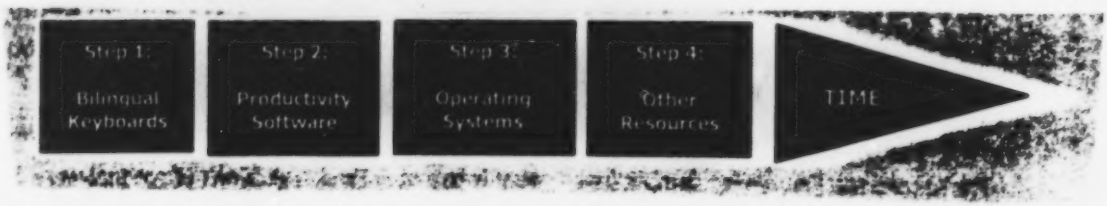
Appendix A provides important information about specific platforms, operating systems and software in the French language that were available in the Fall (2001).

If plans for new hardware purchases or upgrades to newer operating systems and software are not being considered in the near future, schools and jurisdictions may have to configure existing hardware and software to meet the needs of the immersion program. The following section outlines this process and breaks it down into four steps that can be adapted as required.

Option 2. Configuring Existing Workstations

An immersion school that has no upgrades planned in the near future can choose to implement some or all of the solutions outlined below in order to support the French ICT program. The order of these four steps is based on factors such as the priority placed on the acquisition of French language skills, the degree of complexity of the work to be done, the time required to do it and related costs. By following all four steps, schools could provide workstations with "dual-boot" capabilities and parallel partitions for French or English. In a dual-track school, a computer fully configured in this fashion would have to be restarted throughout the day as French immersion students and English language students take turns using it.

FOUR STEPS IN CREATING BILINGUAL COMPUTERS



Step 1: Bilingual Keyboards

When discussing French keyboards, one needs to differentiate between the configuration of the operating system and the purchase of keyboards (hardware) that have French or bilingual keys.

The vast majority of operating systems on the market allow the keyboard to be configured for several languages. This is certainly the case for Windows 95/98/NT/ME/2000 and for Mac OS (versions 7 to 10). Generally, it is possible to specify the languages in which the keyboard will be used by selecting "keyboard" through a configuration or control panel. Depending on the type of installation, this process may require a CD-ROM containing the operating system and its auxiliary resources. It costs nothing and takes only a few minutes to configure the system for the use of a French keyboard.

With regard to the keyboard itself, purchasing bilingual keyboards is probably the best option for immersion schools. These keyboards have keys that show the symbols for both the English configuration (left side of the key) and the French configuration (right side of the key).

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COMPARISON – ENGLISH KEYBOARD AND BILINGUAL KEYBOARD

Keys — English keyboard	Corresponding keys — bilingual keyboard
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? /	? É / é

Bilingual keyboards are available from most computer retailers, and they cost the same as English-only keyboards. Purchasers should allow for a waiting period when ordering these keyboards. Also, in the case of new purchases, it is a good idea to require suppliers to include bilingual keyboards in their tenders.

If it is not possible to acquire bilingual keyboards in the short term, it is strongly recommended that a "map" of the keyboard, resembling a large poster, be hung on the wall to serve as a guide for the students (see Appendix B for an example). This is a simple but effective temporary solution. Writing the French accents with permanent ink on the appropriate keys has been used by some teachers as well.

The *Practical Considerations for the Immersion Classroom* section of this document as well as Appendix G deal with configuring French keyboards at home.

Step 2: French-Language Productivity Software

The second step in making computers bilingual is to install French versions of productivity software. This might include, for example, software used by immersion students on a daily basis, such as Microsoft Office or AppleWorks, as well as a Web browser like Internet Explorer or Netscape Navigator.

To keep students in an immersion environment, schools can use French versions of software that display menus, commands and functions in French. Thus, to perform a computer task, students must continue to think in French, which is desirable in immersion programs. Requiring students to learn and use the French ICT terminology will contribute to their French language development. In addition, the availability of French-language software will support immersion teachers in their efforts to create and maintain a French atmosphere in the classroom.

From a purely technical point of view, French-language productivity software can generally be installed fairly easily and quickly and made to work with an existing English operating system, provided there is sufficient hard disk space on the computer. The options and costs associated with French software are discussed in more detail in Appendix A. For additional information, or to consult the latest updates on the provincial software agreements, visit the technology section of Alberta Learning's Web site at www.learning.gov.ab.ca/technology/software.asp.

Step 3: French-Language Operating Systems

The installation of parallel French-language operating systems is, without doubt, the most technically complex and arduous step for technicians. Based on the fact that students spend little time using the operating system and because of its purchase and installation costs, some people claim that language learning outcomes, as related to the ICT program in French immersion schools, can be achieved through the use of French language software only. In light of the foregoing discussion on the nature of immersion programs, this point of view must be challenged.

It is necessary to recognize that users' first contact with a computer and most of their basic skills (file management, saving, powering down, starting applications, etc.) depend directly on a certain level of mastery of the operating system. It is in the operating system that students will first learn such terms as "file," "folder," "volume" and "drive." This terminology will have a lasting effect on the students' interaction with the technology tools that surround them. Placing children in front of a totally French interface from the outset indicates to them that using a computer in French is normal in the same way as using French language textbooks and literacy resources.

When deciding to install French language operating systems, ICT managers need to take into account three important considerations. First, the operating system acts as a bridge between the computer hardware and the software, which means that, before any major changes are made, the compatibility of all components of the computer installation and the software should be examined carefully. Second, it takes several hours to install a new operating system, especially since it is difficult to predict if everything will function properly in the end. Lastly, the cost of purchasing operating systems often adds up because of the requirements (e.g. hard disk space, amount of RAM, monitor resolution, etc.).

Once a second operating system has been installed, the workstation can be powered up with either of the operating systems by means of a small utility program, or "boot manager" whose primary function is to switch between the systems. Most often, rather than installing both systems side by side on the hard disk, technicians prefer to create two partitions to avoid conflicts between system components and programs. Thus, the French-language system and programs reside on one partition (or sector) of the hard disk, and the English-language system and programs on another.

The cost involved in adding a second operating system varies according to the platform (PC or Mac) and the recommended configuration. See Appendix A for platform-specific information.

There are also ways to cut down on the amount of time required to configure entire labs of computers. For instance, most network administrators now automate this process by using applications for cloning the image of a hard disk to all stations within a network (e.g. "Ghost" for the Windows platform and "Assimilator" for the Macintosh platform). Therefore, while it is true that perhaps two or three hours of extra work will be required to set up a bilingual workstation, significant time can be saved by using one of these "network assistants".

For all immersion schools, being able to work in English remains an essential requirement (for English courses, for example). In certain setups therefore, it may be useful to give each immersion student two passwords, thus offering them flexibility to boot in French or in English.

Step 4: Other Computerized Resources

Once the first three steps are successfully carried out, acquisition of the other French computer resources completes the transformation of the school's computers. Other resources include multimedia encyclopaedias, dictionaries and other reference software, thematic CD-ROMs, etc.

There are four reasons why this step comes last:

1. These resources are not on the list of appropriate software tools identified in the ICT program of studies to achieve learner outcomes.

2. Some teachers may underestimate how complex this step is. When they purchase software, they may focus only on the content and not on the technical requirements. Their purchases may not be appropriate for network operation, which could result in incompatibilities.

3. It is fairly difficult to estimate the cost of such resources, as these costs can vary significantly according to the architecture of the network, the configuration of the workstations and the nature of the resources themselves. In some cases, the purchase and installation of certain resources can prove to be a burden, both in terms of dollars and labour.

4. Many of these resources are now delivered through the Internet rather than CD-ROMs (many popular web-based resources such as encyclopaedias are available in French). This further underlines the importance of ensuring that all workstations are connected to the school local area network for Internet access.

For more details about software selection, see the *Practical Considerations for the Immersion Classroom* section of this document.

This section has suggested ways to create bilingual computer systems. Planning to support the implementation of ICT in the immersion program should be part of a school's or jurisdiction's overall technology plan. There are options schools need to evaluate for the "bilingualization" of computer systems. Decisions have to take into account what will best meet the needs of the program and what will be cost effective, both in terms of financial and human resources.

III. Teachers' Expertise

A major challenge in implementing the ICT program is ensuring that teachers have the required competencies and adequate access to professional development opportunities. This section deals with the specific needs of educators in the immersion program, offers some suggestions, and summarizes the range of ICT competencies for teachers.

Since most teachers are involved in integrating the learning outcomes of the ICT program across the curriculum, they need to be supported in their efforts to acquire the necessary skills and knowledge in this area. To address these needs, schools and jurisdictions may consider two key steps:

1. Conduct a needs assessment to determine each teacher's range of pedagogical and technological know-how in light of the ICT competencies required at each grade level, and

2. Adopt a professional development plan that addresses the skills needed by teachers to teach ICT outcomes as well as the needs that are unique to immersion teachers.

The document *Professional Development for Teaching Technology Across the Curriculum* published by Alberta Learning in 1999 (available electronically and in print) deals extensively with all aspects of planning for professional development.

➤ Needs Unique to Immersion Programs

In French immersion, it is necessary to meet the specific needs of educators who often work in an English-language computer environment. These educators need to acquire French ICT terminology, colloquial expressions, and be able to use these spontaneously and automatically with their students. The less teachers train and work in French, the more difficult it is for them to attain this level of competence.

It is also important to promote exchange and discussion among immersion teachers. By learning strategies specific to second language programs, teachers can facilitate the implementation of the ICT program and help their students acquire ICT competencies.

Offering professional development in French presents some challenges but it is important to plan training opportunities to meet these needs. Potential solutions include:

- peer tutoring among immersion teachers
- including an immersion component in the school's professional development plan
- partnering with neighbouring school districts and schools to offer joint French language ICT professional development days or workshops
- collaborating with neighbouring school districts to use teachers/experts who are able to provide training in French
- cooperative projects among immersion classes
- having teachers participate in French-language workshops offered by different organizations

- using on-line resources that include tutorials, examples of successful teaching practices, models of teaching scenarios, etc. Appendix C presents some excellent sites that may be of interest to French immersion teachers.

➢ Common Needs – Technology

To effectively implement the ICT program of studies, French immersion teachers need general knowledge and skills related to the use of technology as well as more specific knowledge and skills enabling them to teach the ICT outcomes in a particular subject area at a given grade level.

General knowledge and skills needed by teachers to make them informed users, thus helping to create a climate conducive to the integration of technology in the school include:

- basic knowledge of operating systems, computers and peripherals
- basic ICT terminology
- network file management
- e-mail and sending/receiving attachments
- word processing
- navigation and basic Internet searches
- manipulation and insertion of images in documents
- other applications (spreadsheet, databases, etc.)

Specific knowledge and skills needed by teachers to perform tasks they would assign to students in specific subjects include:

- good knowledge of spreadsheets for secondary math and science
- intermediate-level mastery research to word processing for French language arts
- good Internet information research and evaluation skills for social studies

Some school districts prescribe skill profiles for their teachers by grade and by subject, while others let teachers choose what will be most useful to them. Appendix C includes addresses of sites containing profiles and competencies by levels (beginning, intermediate...).

➢ Common Needs – Teaching

Helping teachers with the many challenges of integrating ICT program outcomes into the different subject areas will remain a professional development priority for some time. Given that the successful implementation of the ICT program in the medium or long term depends largely on how technology will be used to help students learn, effective pedagogical practices must be part of the professional development package. The French Language Services Branch is currently preparing a document on this topic, *Programme et pédagogie,* which is part of the *Pratiques exemplaires* series.

Almost all school districts offer professional development workshops in technology. Other organizations active in this area often give workshops in French. The Edmonton Regional Consortium is the coordinating agency for French language professional development in Alberta (www.quasar.ualberta.ca/erc/). The Regional Consortia offer TLT institutes (Teaching and Learning with Technology – Enseigner et apprendre avec la technologie – www.tlt.ab.ca) as well as media awareness sessions. 2Learn (www.2learn.ca) facilitates the creation of cooperative classroom projects and has a bank of selected French sites for classroom activities.

Implementing the ICT program should be a project of the entire school. Planning for effective implementation requires the active collaboration of the entire staff. Adopting professional development strategies to address the range of pedagogical, technical and linguistic skills that French immersion teachers need is a key step in the successful implementation of the ICT program.

IV. PRACTICAL CONSIDERATIONS FOR THE IMMERSION CLASSROOM

This section identifies considerations that are unique to the integration of ICT in immersion schools and classrooms. These unique considerations relate to the program itself, planning for implementation and maintenance, selection, software and communication with parents.

➤ The ICT Program of Studies

The program of studies is organized in two sections: General Learning Outcomes (GLOs) and Specific Learning Outcomes (SLOs). The French and English versions of the ICT Program of Studies are identical, except for the following changes, which were made to ensure better correspondence with the French language arts program or to clarify the intent of the ICT program. The changes are indicated in italics.

CATEGORY	TEXT TAKEN FROM THE FRENCH VERSION OF THE ICT PROGRAM
GLO "C"	[translation] communicating, inquiring, decision-making and problem-solving *in the language of instruction*
GLO C3 **SLO** 3.1	[translation] evaluate the authority *(person, organization, institution recognized in their field)* and reliability of electronic sources
GLO C3 **SLO** 4.1	[translation] evaluate the authority *(person, organization, institution recognized in their field)*, reliability and validity of electronically accessed information
GLO F6 **SLO** 2.4	[translation] use appropriate keyboarding techniques for the different keys *(letters, accents, cedilla, punctuation, etc.)*
GLO P1 **SLO** 1.1	[translation] create original text, using word processing software, to communicate and *demonstrate good understanding of the communication intent and the formats used (e.g. short text, cards, posters)*
GLO P1 **SLO** 2.1	[translation] create and revise original text to communicate and *demonstrate good understanding of the communication intent and the formats used (e.g. paragraphs, letters, tables, etc.)*

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How to Plan the Integration of SLOs in Immersion Programs

The integration of ICT into immersion schools and classrooms should be included in the master plan developed for the school as a whole. It is very important to ensure that English and French-language teachers of the same grade and the same division cooperate with each other to share responsibility for the learning and teaching of ICT outcomes.

ICT learning outcomes have been identified by division rather than by grade, thus giving teachers in a school considerable latitude in developing their plans. To cover the entire program and avoid excessive repetition, teachers in each division should plan the integration of SLOs together. This "vertical" planning within a teaching division (three years) is in addition to the "horizontal" planning that determines the skills to be developed in each subject at a given grade level. Single-track immersion schools, where all subjects except English language arts are taught in French, can benefit from maximal ICT integration in that language. ICT planning is one of the subjects addressed in detail in the document *Programme et pédagogie* to be published in 2002 as part of the *Pratiques exemplaires* series.

As in the French language arts program of study, in ICT the oral or visual dimension should be emphasized in Division I. Recognizing and being able to use words correctly in the target language are the first steps in language development. Thus, recognizing icons takes precedence over recognizing written commands or identifying the components of a computer system with its peripherals (monitor, keyboard, mouse, printer, etc.). Several SLOs in the "Foundational Operations, Knowledge and Concepts" category lend themselves well to the students' initial contacts with the computer and technology equipment. Following are two examples:

- F1 1.2: Apply terminology appropriate to the technologies being used at this division level.
- F6 1.1: Perform basic computer operations, which may vary by environment, including powering up, inserting disks, moving the cursor, clicking on an icon, using pull-down menus, executing programs, saving files, retrieving files, printing, ejecting disks and powering down.

Teachers of immersion students must also determine what should be learned in courses taught in French and in courses taught in English. They have to ensure that knowledge and skills acquired by the students are transferred not only from one subject to another, but also from one language to the other. Thus, two teachers of the same class could decide that the students will acquire specific SLOs in the English language arts course, and will demonstrate their transfer in a French science assignment.

Careful Selection of On-Line and Software Products

Teachers are constantly called upon to make decisions regarding materials to be used in the classroom. For obvious reasons, they have the responsibility to protect students from inappropriate, offensive, sexist, racist, propagandist or simply false content. The choice of educational material is also based on other criteria, such as the level of complexity and the level of language.

Evaluation of software and on-line products should be part of the school's ongoing ICT implementation plan. Criteria and procedures for selecting software should be developed with the teachers according to school board policies and based on student needs in the English and French programs, as well as on financial and network considerations such as compatibility with the system or disk space required. Teachers should be involved in the decision-making process.

In immersion programs, particular attention should be paid to the level of language used in the productivity, subject specific, or reference French-language software.

To achieve the ICT program outcomes, immersion students need access to productivity or application tools in French, such as word processing, spreadsheets, databases, draw/paint/graphics packages, Internet browsers, e-mail, multimedia applications and clipart. When selecting these tools, educators should take into account **the variety and complexity of the tools/functions in terms of the students' conceptual and linguistic levels.** Are too many functions included, or too few? Are they appropriate for the age group being considered? Is the level of French just right, too easy, too difficult?

Thus, teachers reviewing word processing software for Division 1 immersion classes may find that many functions go beyond the ICT program requirements and require extensive training and sophisticated language skills. They may opt for a simpler word processing program in keeping with their students' needs and language development.

Most word processing software programs (regardless of the language) include limited spell check and grammar check functions. Consequently, some schools choose to buy additional reference tools or on-line programs such as dictionaries or grammar checkers. This type of software has often been developed for secondary students or adults, and is usually too advanced for elementary students, who do not have the language skills necessary to discriminate among alternatives. Appendix D lists reference software that was reviewed by Alberta Learning. **These titles are suggested, not required, materials.** Information about newer reference resources can be obtained from the French Language Services Branch, French Language Arts Program Administrator at (780) 427-2940 or by visiting the French section of the Alberta Learning Web site.

Appendix E identifies items to consider when assessing reference software programs for the classroom. This list is not exhaustive and educators are encouraged to add to it, and to adapt it to meet the needs of their program.

Other software or on-line products such as encyclopaedias, newspapers, etc. **are not required to achieve the ICT program outcomes**, but they may be valuable resources in core and optional subjects. These resources also need to be assessed for curriculum fit, instructional design, pedagogical support, appropriate content (reliability, accuracy, absence of bias or stereotype), conceptual suitability, linguistic level, technical design and visual support, network compatibility and cost. The Learning Resources Centre catalogue and its Web site www.lrc.learning.gov.ab.ca contain the up-to-date list of Alberta Learning's approved software resources.

➤ Quality of the Language in Cyberspace

The quality of French is an important consideration in implementing ICT in immersion schools and classes. Research suggests that students' motivation is increased when they have access to electronic tools. Publishing on the Web and communicating with other students and adults is an increasing trend in schools, and can have a positive influence on students' learning and ultimately on the quality of their projects. On the other hand, some tools such as e-mail – perhaps because of its informal nature – can lead users to opt for speed rather than coherence in communicating. Taking shortcuts and ignoring the importance of clarity is detrimental to communication and can have a negative impact on the reader.

All immersion teachers share the responsibility for ensuring the highest possible standard of French in all subject areas. They should give a high priority to maintaining the quality of the language used in the electronic environment. Discussions with students could focus on the importance of quality and their own responsibility when communicating electronically. Students need to understand that they have to communicate clearly and appropriately for the intended audience, that they should display quality work both in terms of content and language, that they want to be proud of the work they publish and enhance the reputation of their school, and that they can be models for other students viewing their projects.

Immersion students are second language learners; they should achieve a linguistic level in French that is appropriate for their grade. Achieving native-like fluency is not expected. It is important, as previously discussed, that they produce quality work in cyberspace. Therefore, it is recommended that schools put into place standards, procedures and strategies for communicating and publishing electronically in French which could include:

- Establishment of linguistic standards for the different grades and communicating them to students[1]
- Adoption of steps in the language review process such as:
  - review by the author
  - review for linguistic content by a peer, teacher or third party
  - a sign-off procedure when required steps have been completed
  - use of comments such as "Revised and corrected by the teacher" or "Original student text" on the Web pages.

➤ ICT at School and at Home

Now that a growing number of students have computers at home, parents also need information about steps to take in integrating ICT in French immersion. The *Curriculum Handbooks for Parents* series offers an overview of all the programs, including ICT. The electronic versions are available on Alberta Learning's Web site at the following addresses: www.learning.gov.ab.ca/parents/handbooks/ or www.learning.gov.ab.ca/french/Manuel_parents/Manuels.asp. The brochure in Appendix F could also be distributed during the information sessions at the start of the year. It is available electronically at www.learning/gov.ab.ca/ict/ICTparentbrochure.pdf.

If students want to do class work on the computer at home, it would be useful for them to be able to write in French (i.e. to type accents, cedillas, etc.). Instructions on how to add a French keyboard layout in Windows and Mac OS are included in Appendix G.

[1] The *Matériel d'évaluation pour la salle de classe (MÉSC)* documents for French language arts and Études sociales, available at LRC, offer indicators of students' language development and curricular achievements at each level.

Considerations that are unique to the immersion program include collaborative planning for sequencing and integrating the ICT outcomes in French and English language core subjects, selecting French software or on-line resources that meet the needs of students and implementing communication and publishing strategies to provide students with good linguistic models. Taking these issues into account while planning the integration of the ICT program, as well as keeping students and parents informed, will help educators successfully implement the ICT program.

Appendices

APPENDICES

The following topics have been included in the Appendices:

A. Information About French Language Software and Operating Systems
This list, which is intended for technicians, ICT coordinators and teachers, contains specific information on software and operating systems as of September 2001.

B. Example of a French Keyboard
This chart showing the location of the French accents on a unilingual keyboard may be enlarged and posted on classroom or laboratory walls, and distributed to students who want to have a copy at home.

C. Useful Links for Implementing the ICT Program
These URL addresses, which are intended for teachers, are referred to throughout this document.

D. Recommended Software for French Language Arts
This list contains reference software evaluated by Alberta Learning in 2000-2001.

E. Key Considerations in Selecting Software or On-Line Reference Products
This appendix identifies items to be considered when reviewing on-line or software products for classroom use.

F. Learning Technology in Alberta Schools: Information for Parents
This brochure, published by Alberta Learning in June 2001, provides parents with an overview of technology, the ICT program and the support provided for its implementation.

G. Adding French Keyboard Layout – Windows and Mac OS
These pages can be distributed to students/parents who would like to add the French keyboard option to their home computer.

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➢ Appendix A

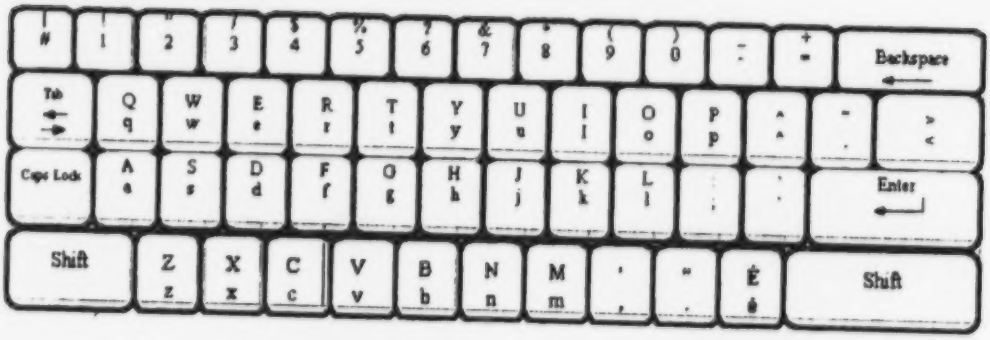
INFORMATION ABOUT FRENCH LANGUAGE SOFTWARE AND OPERATING SYSTEMS (as of September 2001)

	Windows	Macintosh
Latest Operating Systems	Windows XP and Windows 2000 can be installed with the "Multilanguage Pack" option, allowing users to choose the interface language (menus, dialogues, commands, etc.) without having to reboot or install a separate operating system.	Mac OS X has built-in multilanguage capabilities that allow users to specify the language of the interface for the operating system, as well as applications (which look at the preferences set by the user upon launching). No rebooting is necessary and no extra installation is necessary.
Older Operating Systems	Windows 95, 98, and NT, have French versions which, under the current license agreement with Microsoft, can be installed in a dual-boot setup at no additional cost, provided an equivalent (same) version is licensed in English.	Mac OS 7, 8 or 9 are available in French. Licenses must be purchased for the French versions. These systems can then be installed in a dual-boot setup.
Productivity Software	Equivalent French versions of Microsoft Office 97 products can be installed at no cost, provided an English license has been purchased for that particular version. Microsoft Office 2000 and XP are available in multilingual versions that will switch the language of the interface according to user preferences. For all other software, additional licenses are required when purchasing French versions. Web browsers can be downloaded and installed in French at no cost.	Future versions of AppleWorks, Microsoft Office and many other widely used software packages built for Mac OS X will take advantage of the operating system's multilanguage capabilities. Existing versions of Office 98, 2000 and AppleWorks (versions 1 through 6) are available in French. Additional licenses must be purchased. Web browsers can be downloaded and installed in French at no cost.

For additional information, or to consult the latest updates on the provincial software agreements, visit the technology section of Alberta Learning's Web site at www.learning.gov.ab.ca/technology/software.asp.

Appendix B

EXAMPLE OF A FRENCH KEYBOARD



Characters	Instructions
é	question mark
à, è, ù	apostrophe + letter
â, ê, î, ô, û	opening square bracket followed by the letter
ç	closing square bracket followed by the letter
ë, ï, ü	Shift + closing square bracket followed by the letter

Upper case letter can be created by following the usual steps for an upper case letter and the accents.

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Appendix C

USEFUL LINKS FOR IMPLEMENTING THE ICT PROGRAM

TITLE	URL
ALBERTA LEARNING	
Direction de l'éducation française (DÉF)	www.learning.gov.ab.ca/French/
DÉF – Bulletins « Connection »	www.learning.gov.ab.ca/connection/article.asp
Stakeholder Technology Task Group - General information - Provincial software agreements	www.learning.gov.ab.ca/technology/default.asp www.learning.gov.ab.ca/technology/software.asp
ON-LINE RESOURCES FOR TEACHERS (TUTORIALS, TEACHING SCENARIOS AND PRACTICES)	
Free computer tutorial Web site: Internet, Word, Excel, PowerPoint, Access (bilingual)	www.er.uqam.ca/merlin/xw999998/fr/fformation.htm
Projet TELUS 2Learn	www.2learn.ca/
RITAS (Ressource d'intégration de la technologie destinée aux administrateurs scolaires). The sections *Exercices dirigés en matière d'intégration de la technologie* and *Utilisation de la technologie dans l'enseignement et l'apprentissage* are particularly useful, and can be reached by selecting in the menu *Ressources en ligne* then *Ressources d'intégration de la technologie*	www.satir-ritas.org/default.asp
La Toile et les jeunes (Réseau éducation médias)	www.latoilelesjeunes.org
Teaching and Learning with Technology (TLT)	www.tlt.ab.ca
ICT COMPETENCIES	
Tool to identify pedagogical and technological competencies (in French) developed in collaboration with school districts in Quebec	www.cssmi.qc.ca/cgi-bin/profil/
Technology skills checklists for teachers (in English) – Edmonton Public School District	dtp.epsb.net/projects/xxi.htm
TERMINOLOGY	
Le Signet – référence terminologique en technologie	www.w3.olf.gouv.qc.ca/banque/

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Appendix D

RECOMMENDED SOFTWARE FOR FRENCH LANGUAGE ARTS

The following resources were reviewed by the French Language Services Branch in 2000-2001 and can be bought directly from the publishers. For updated information on newer resources, please contact the French Language Arts Administrator at (780) 427-2940 or visit the French section of the Alberta Learning Web site.

GRAMMAR REFERENCES

GramR Junior (CD-Rom) IBM/Diffusion Multimédia

This program has two components:

- *Le GramR Junior* – recommended for grades 3 to 6
- *Le Rédacteur* – recommended for grades 7 to 12

Antidote : Le remède à tous vos mots (CD-Rom, 2000) ISBN 2922010066
Druide Informatique Inc. – recommended for grades 7 to 12

Correcteur 101 (CD-Rom, 1998)
Les Logiciels Machina Sapiens Inc. – recommended for grades 7 to 12

Correcteur Bilingue (CD-Rom, 2000)
Druide Informatique Inc. – recommended for grades 7 to 12

DICTIONARY

Le Visuel Compact – Dictionnaire multimédia (CD-Rom, 1995) ISBN 2890378659
Éditions Québec/Amérique – recommended for grades 7 to 12

OTHER

Tap'Touche (Windows version 2.1, 1998)
De Marque Inc./Diffusion Dimédia Inc. – recommended for grades 4 to 6

➢ Appendix E

KEY CONSIDERATIONS IN SELECTING SOFTWARE OR ON-LINE REFERENCE PRODUCTS

TECHNICAL

Installation or downloading is free of problems, rapid, easy. The resource is compatible with the network.

Browsing through the application is easy (entry and exit points, scroll-down menus, returns). Links work well.

Options are included for using, storing and presenting research results (saving, downloading texts and illustrations, bulletin board).

Learning to use the program effectively and independently is relatively easy and quick.

The number, variety and complexity of the functions are appropriate for the age group.

Technology is used effectively to present the content, not for its own sake.

VISUAL

Multimedia support is attractive, appropriate and efficient: size and variety of texts, bolding or underlining key words/ideas, text and background colours, illustrations and photos, sound effects, animation.

CONTENT

Organization/sequencing of the content is clear and supports the research: quantity of information provided simultaneously, choice of difficulty level offered, key words, definitions, syntheses, summaries, table of contents, indexing, glossary, visual support such as icons, maps, illustrations, diagrams.

Visual and textual information is useful, complete and judiciously chosen (not too much, not too little).

Information is reliable, up to date and free of error (bibliography, reliability of sources, inclusion of dates).

Information is non-discriminatory and free of stereotype/bias, violence, profanity or explicit sexual content.

LANGUAGE

Texts are error free (spelling, grammar, syntax).

The language used stimulates learner's reading and understanding.

The level of difficulty is appropriate for this age group: vocabulary, length and structure of sentences, absence of colloquial expressions.

LEARNING TECHNOLOGY IN ALBERTA SCHOOLS

Information for Parents

June 2001

What is technology?

Technology refers to the way we do things – the processes we use, such as the assembly line or job procedures, and the tools and machines that we use to do work, such as computers. People have been using technology for a very long time, in all aspects of their lives: to produce goods, grow crops, perform services and carry out other useful activities. Today, we think of technology as computers, but computers are only a small part of what technology is about. Our students need a broad range of technology skills that will serve them well in a variety of situations.

Why is information and communication technology (ICT) part of the curriculum?

Keeping the curriculum current is an essential part of preparing students for adult life in a complex world. This is as important in grade 1 as it is in grade 12.

By the time they leave school, students must be prepared to use and apply technology in effective, efficient and ethical ways. Post-secondary institutions and the workplace expect high school graduates to be able to use basic information and communication technologies (ICT). Now, more than ever before, all students need to learn basic ICT skills. These skills include managing information, analyzing data, finding information and answers to questions, doing research and solving problems.

How is technology taught in Alberta schools?

Historically, technology has been a stand-alone curriculum or course. For example, students in shop, home economics and typing classes learned how to use specific tools.

Today, the situation is quite different. Information and communication technologies apply to virtually every subject in one way or another. The ICT skills add new dimensions and opportunities to what students learn in the core programs and courses. These ICT skills are best learned through application, and through projects and problem-solving activities. Students still have access to stand-alone specialized technology courses in career and technology studies programs for junior and senior high.

Does this mean that your child is sitting in front of a computer all day, and the computer is replacing teachers? Definitely not! Computers cannot replace teachers. They perform different functions and roles. Students participate in a variety of activities in the classroom and school, with their teachers, as usual. When students need to work on a computer to write or search for information or create a multimedia presentation, they have time to use this tool to get their work done. They still need to use pencils and paper, read books and discuss issues with their classmates and teachers, just as adults use a variety of tools that are appropriate to the task. The computer is just one tool. Students need to learn when it is the most appropriate tool to use, and when other tools and processes are best.

Why is the ICT program not a stand-alone course?

Technology is a part of almost every aspect of life and learning today. It is therefore appropriate for students to learn and apply technology knowledge and skills while learning in content areas such as language arts, mathematics, science and social studies.

How did Alberta Learning develop the ICT outcomes for kindergarten to grade 12?

Alberta Learning took the following steps to develop appropriate ICT outcomes:

1. extensive review of work being done in this area – in national, provincial and state ministries, and in school jurisdictions;
2. consultation with business (employers and employees), parents, teachers and community members across the province; and
3. invitations to parents, business leaders, teachers and members of the community to review a first draft of the ICT outcomes (before publishing the Information and Communication Technology Program of Studies).

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What is the Information and Communication Technology (ICT) program of studies?

The ICT curriculum is the basis for a program of studies, kindergarten to grade 12. Provincial implementation of the program began in September 2000, and it is to be fully implemented by June 2003.

The ICT program outlines what students are expected to know and be able to do with respect to technology. The program, which is intended to be taught within core programs and courses, emphasizes the processes and skills that are best learned and demonstrated through application.

What are the ICT outcomes?

In Alberta, students are expected to develop knowledge and skills in communication, inquiry, decision making and problem solving. Technology provides the processes and the tools to identify and gather data, as well as classify and organize, summarize and synthesize, and analyze and evaluate information.

The ICT outcomes cover three different but related skill sets:

1. a **foundation** of knowledge, skills and attitudes that deals with topics such as basic computer skills, Internet safety, ergonomics and e-commerce;
2. a **set of skills** that address productivity; for example, composing, organizing, managing, graphically displaying data and information, and using networks; and
3. **applications** of these processes that provide practical experience in communicating, investigating, decision making and problem solving.

What support is government giving to schools to implement technology?

Government provided $125 million in Technology Integration Funding for students from January 1997 to June 2000. Of these funds, $60 million have been allocated for the 1999-2000 to 2001-2002 school years. An additional $20 million per year will be provided beginning the 2002-2003 school year. The basic instructional grant also provides for technology learning as an essential part of education.

Government is also investing $200 million over three years for the development of SUPERNET, an initiative that will provide high-speed Internet access to all learning institutions. An additional $24 million has been budgeted to cover the costs for all school jurisdictions to have basic access to high-speed networking.

Alberta Learning is a partner on several ICT professional development initiatives:

- TELUS Learning Connection (www.2learn.ca)
- Galileo Educational Network (www.galileo.org)
- Teaching and Learning with Technology (www.tlt.ab.ca)
- Web Awareness Workshops (www.learning.gov.ab.ca/technology)
- School Administrators' Technology Integration Resource (www.satir-ritas.org)

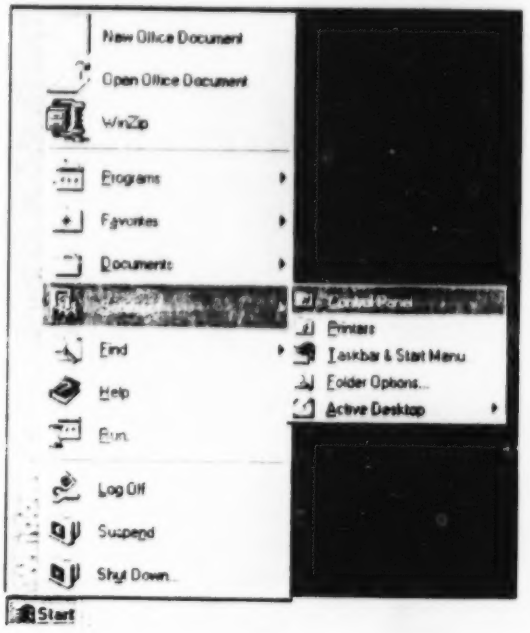
FOR FURTHER INFORMATION, CONTACT:

Stakeholder Technology Task Group
Alberta Learning
Phone: (780) 427-9001
[Connect toll-free in Alberta at 310-0000]
Fax: (780) 415-1091
E-mail: tech.contact@gov.ab.ca
Web Site: www.learning.gov.ab.ca/ict

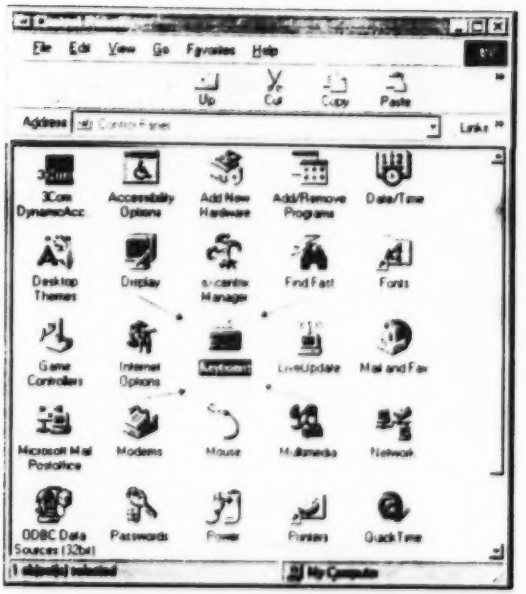
> APPENDIX G

ADDING FRENCH KEYBOARD LAYOUT — WINDOWS 95/98/2000/NT/ME

STEP 1:
Open the "Control Panel" Folder.



STEP 2:
Double click on the "Keyboard" control panel.



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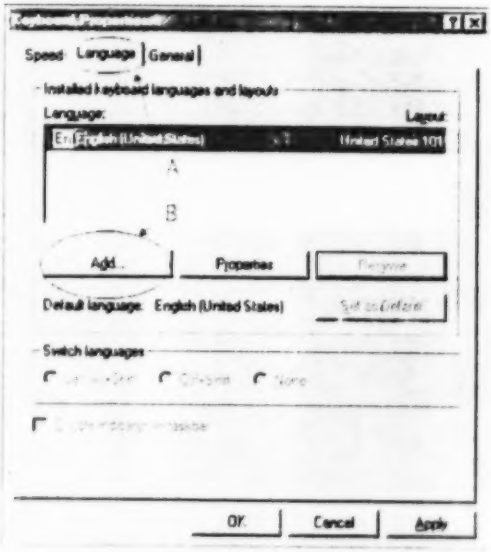
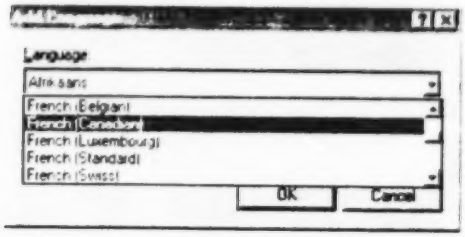
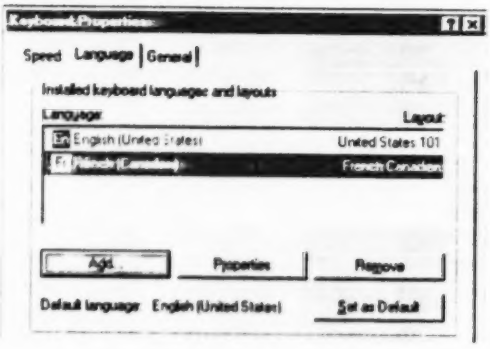
STEP 3:
In the Keyboard Properties window, click the "Language" tab (see A). Then, click the "Add" button (see B).



STEP 4:
In the language list, select "French Canadian". Click "OK".



STEP 5:
Back in the Keyboard Properties window, you should now see the French Canadian layout. Click "Apply", then "OK".



STEP 6:
In the clock tray, at the bottom right corner of the screen, you will have the option of switching between English and French.

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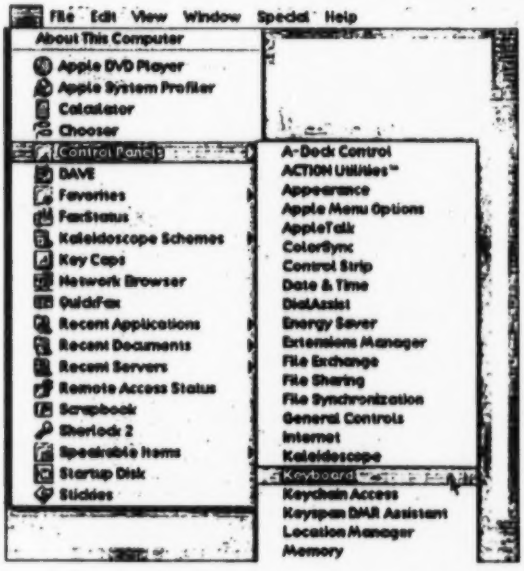
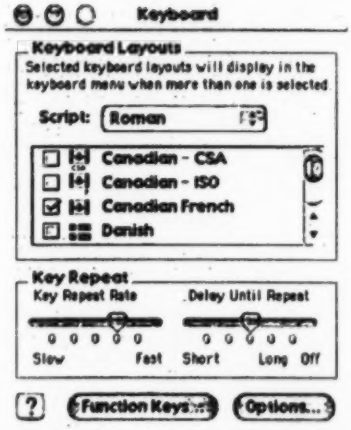
ADDING FRENCH KEYBOARD LAYOUT — MAC VERSIONS OS 7 TO 9

STEP 1:
Find the "Keyboard" control panel.





STEP 2:
Select the desired French layout. Consult with school staff to find out which one is consistent with their computers. Close the keyboard control panel.

STEP 3:
You should now see the following box in the upper right corner of your screen. This menu allows you to switch from one language to the other.

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